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Ancient History Sourcebook:

Hellenic & Hellenistic Science

- Hippocrates, *Aphorisms*, c. Fifth Century BCE
 - Archimedes, *Letter to Dositheus*, c. 220 BCE
 - Galen, *Medicine*, c. Mid-Second Century CE
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Hippocrates, *Aphorisms*, c. Fifth Century BCE

Sec. I. 1. Life is short, art is long, occasion sudden, experiment dangerous, judgment difficult. Neither is it sufficient that the physician do his office, unless the patient and his attendants do their duty and external conditions are well ordered.

6. In extreme diseases extreme and searching remedies are best.

13. Old men easily endure fasting, middle-aged men not so well, young men still less easily, and children worst of all, especially those who are of a more lively spirit.

14. Those bodies that grow have much natural heat, therefore they require good store of food or else the body consumes, but old men have little heat in them, therefore they require but little food, for much nourishment extinguishes that heat. And this is the reason that old men do not have very acute fevers, because their bodies are cold.

20. Those things that are or have been justly determined by nature ought not to be moved or altered, either by purging or other irritating medicine, but should be let alone.

Sec. II. 3. Sleeping or walking, if either be immoderate, is evil.

4. Neither satiety nor hunger nor any other thing which exceeds the natural bounds can be good or healthful.

24. The fourth day is the index of the seventh, the eighth of the beginning of the week following. But the eleventh day is to be considered, for it is the fourth day of another seventh. And again the seventeenth day is to be considered, being the fourth from the fourteenth and the seventh from the eleventh.

51. It is dangerous much and suddenly either to empty, heat, fill, or cool, or by any other means to stir the body, for whatever is beyond moderation is an enemy to nature; but that is safe which is done little by little, and especially when a change is to be made from one thing to another.

Sec. III. 1. Changes of seasons are most effectual causes of diseases, and so are alterations of cold and heat within the seasons, and other things proportionately in the same manner.

Sec IV. 37. Cold sweats in acute fevers signify death, but in more mild diseases they mean the continuance of the fever.

38. In what part of the body the sweat is there is the disease.

39. And in what part of the body there is unusual heat or cold there the disease is seated.

Sec. VII. 65. The same meat administered to a person sick of a fever as to one in health will strengthen the healthy one, but will increase the malady of the sick one.

Sec. VIII. 6. Where medicines will not cure incision must be made; if incisions fail, we must resort to cauterizing; but if that will not do we may judge the malady incurable.

18. The finishing stroke of death is when the vital heat ascends above the diaphragm and all the moisture is dried up. But when the lungs and heart have lost their moisture, the heat being all collected together in the most mortal places, the vital fire by which the whole structure was built up and held together is suddenly exhaled. Then the soul leaving this earthly building makes its exit partly through the flesh and partly through the openings in the head, by which we live; and thus it surrenders up this cold earthly statue, together with the heat, blood, tissues, and flesh.

Archimedes, *Letter to Dositheus*, c. 220 B.C.:

Archimedes to Dositheus, greeting: Formerly I sent to you the studies which I had finished up to that time together with the demonstrations, which were to show that a segment bounded by a straight line and a conic section is four-thirds of the triangle on the same base as the segment and of the same height. Since that time certain propositions as yet undemonstrated have come to my mind, and I have undertaken to work them out. These are: 1. The surface of any sphere is four times the surface of its greatest circle; 2. The surface of any segment of a sphere is equal to the surface of that circle the radius of which equals the straight line drawn from the vertex of the segment to the circumference of the circle which serves as the base of the segment; 3. That a cylinder with a base equal to the great circle of a given sphere, and a height equal to the diameter of the sphere contains half the volume of that sphere and its surface is equal to half the surface of that sphere.

These propositions, of course, were always true of these figures, but they were hidden to the men who studied geometry before my time. Therefore, since I have discovered that these things hold true of these figures I do not fear to place them alongside my own previous results and the most thoroughly established theorems of Eudoxus, such as: any pyramid is equal to one-third of the prism of the same base and height, and any cone is equal to one-third of the cylinder of the same base and height.

First Postulate. Supposed that a fluid is of such a character that when its component parts are undisturbed and in immediate contact the part which is subject to the less pressure is moved by the part which is subject to the greater pressure; and that each part is forced in a perpendicular direction by the part above, if the fluid is compressed.

Proposition 1. If a surface is always cut by a plane passing through a given point, and if the section thus formed is always a circle whose center is the given point, the surface is that of a sphere.

Proposition 2. The surface of any still fluid is always the surface of a sphere whose center is the center of the earth.

Proposition 3. Those solids which are of the same weight as a fluid in proportion to their size, when sunk in that fluid will be submerged in such a way that they neither extend above that fluid nor sink below it.

Proposition 4. A solid which is lighter than a given fluid will not sink below the surface when placed in that fluid, but part of it will extend above the surface.

Proposition 5. A solid lighter than a given fluid will, when placed in that fluid, be so far submerged that the weight of the solid will be equal to the weight of the fluid displaced.

Proposition 6. If a solid lighter than a given fluid be forced into that fluid the solid will be driven upwards again by a force which is equal to the difference between the weight of the fluid and the weight of the amount of fluid displaced.

Second Postulate: If a solid lighter than a given fluid rest in that fluid the weight of the solid to the weight of an equal volume of the fluid will be as the part of the solid which is submerged is to the whole solid.

Galen, Medicine, c. Mid-Second Century CE

There are in all three branches of the study of medicine, in this order. The first is the study of the result by analysis; the second is the combining of the facts found by analysis; the third is the determining of the definition, which branch we are now to consider in this work. This branch of the science may be called not only the determining of the definition, but just as well the explication, as some would term it, or the resolution, as some desire, or the explanation, or according to still others, the exposition. Now some of the Herophilii, such as Heraclides of Erythrea, have attempted to teach this doctrine. These Herophilii and certain followers of Erasistratus and of Athenaeus, the Attalian, studied also the doctrine of combination. But no one before us has described the method which begins with the study of the results, from which every art must take its beginning methodically; this we have considered in a former work.

Chap. I. Medicine is the science of the healthy, the unhealthy, and the indeterminate, or neutral. It is a matter of indifference whether one calls the second the ill, or the unhealthy. It is better to give the name of the science in common than in technical terms. But the healthy, the unhealthy, the neutral, are each of them subject to a three-fold-division: first, as to the body; second, as to the cause; and third, as to the sign. The

body which contains the health, the cause which affects or preserves the health, and the sign or symptom which marks the condition of the health, all these are called by the Greeks hygienia. In the same way they speak of the bodies susceptible to disease, of causes effecting and aiding diseases, and of signs indicating diseases, as pathological. Likewise they speak of neutral bodies, causes, and signs. And according to the first division the science of medicine is called the science of the causes of health, according to the second, of the causes of ill-health, and according to the third of the causes of neutral conditions.

Chap. 2. The healthy body is simply that which is rightly composed from its very birth in the simple and elementary parts of its structure, and is symmetrical in the organs composed of these elements. From another point of view, that is also a healthy body which is in sound condition at the time of speaking.

Source:

From: Oliver J. Thatcher, ed., The Library of Original Sources (Milwaukee: University Research Extension Co., 1907), Vol. III: The Roman World, pp. 286-292.

Scanned by: J. S. Arkenberg, Dept. of History, Cal. State Fullerton. Prof. Arkenberg has modernized the text.

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